

WILLOW CREEK - DUNCAN'S MILL
LOCATION & PRELIMINARY

F.W. Eagleston
1908

- Transit Notes -
Prelim. Monte Rio to
Camp Vaction

TRANSIT BOOK.

N^o 1 D.

F.W. Eagleston
Asst Engr

14.113.0133

EUGENE DIETZGEN CO.,

Drawing Materials and Surveying Instruments.

NEW YORK.

CHICAGO.

SAN FRANCISCO.

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 20 FEET WIDE. SIDE SLOPES 1 TO 1.

FOR SINGLE TRACK EXCAVATION.

"Copyright, 1902, by Eugene Dietzgen Co."

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	0
1	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	1
2	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	2
3	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	3
4	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	4
5	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	5
6	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	6
7	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	7
8	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	8
9	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	9
10	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	10
11	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	11
12	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	12
13	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	13
14	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	14
15	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	15
16	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	16
17	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	17
18	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	18
19	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	19
20	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	20
21	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	21
22	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	22
23	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	23
24	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	24
25	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	25
26	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	26
27	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	27
28	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	28
29	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	29
30	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	30
31	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	31
32	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	32
33	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	33
34	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	34
35	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	35
36	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	36
37	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	37
38	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	38
39	49.0	49.1	49.2	49.3	49.4	49.5	49.6	49.7	49.8	49.9	39
40	50.0	50.1	50.2	50.3	50.4	50.5	50.6	50.7	50.8	50.9	40

Calculated by F. E. Paradis, C. E.

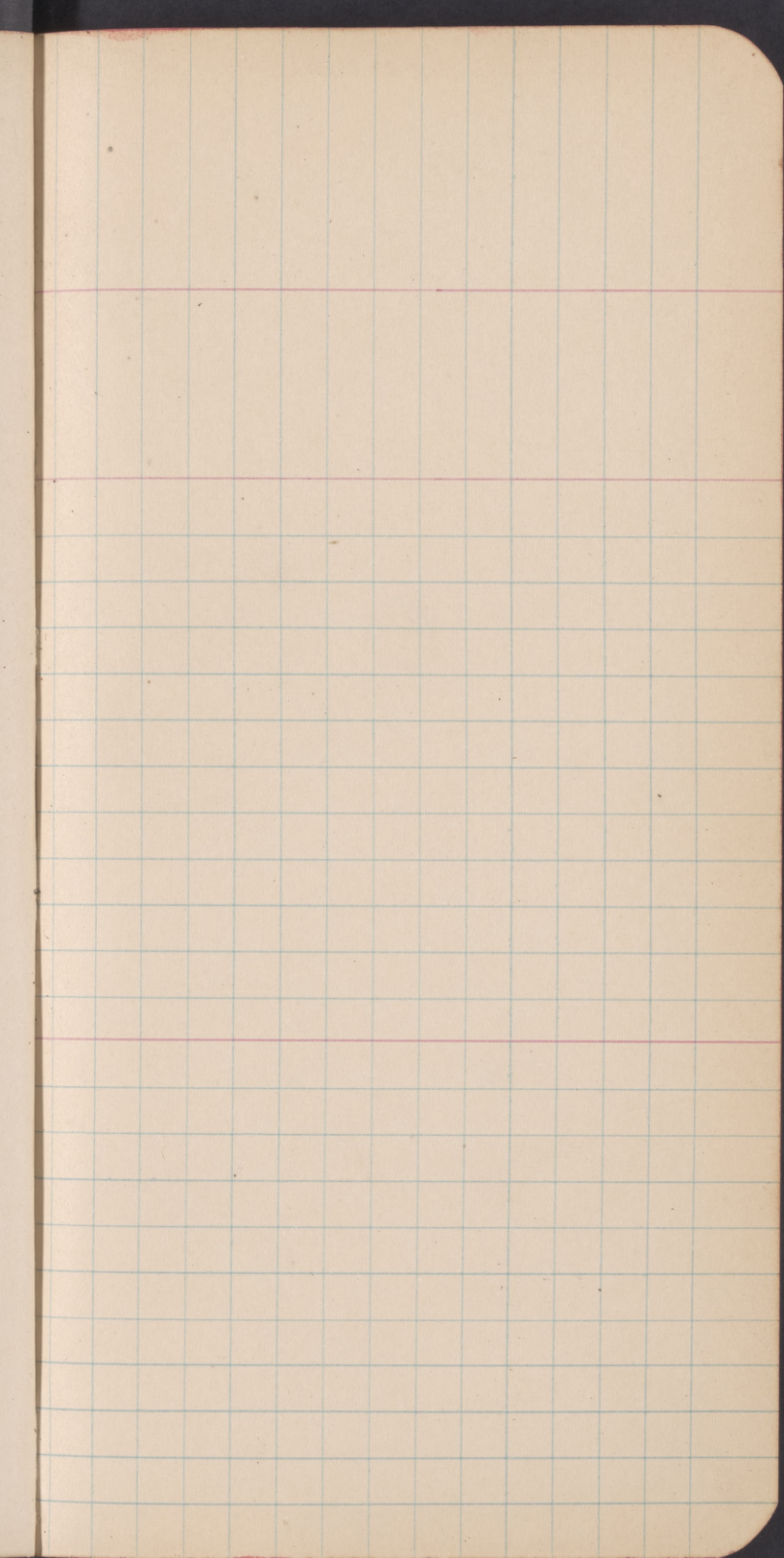
F. H. Gilman Transitman

DUNCAN'S MILL—WILLOW CREEK

LOCATION & PRELIMINARY

F. W. Egelston, Asst Engr
F. H. Gilman Transit.
May. 1908.

670
670
1340



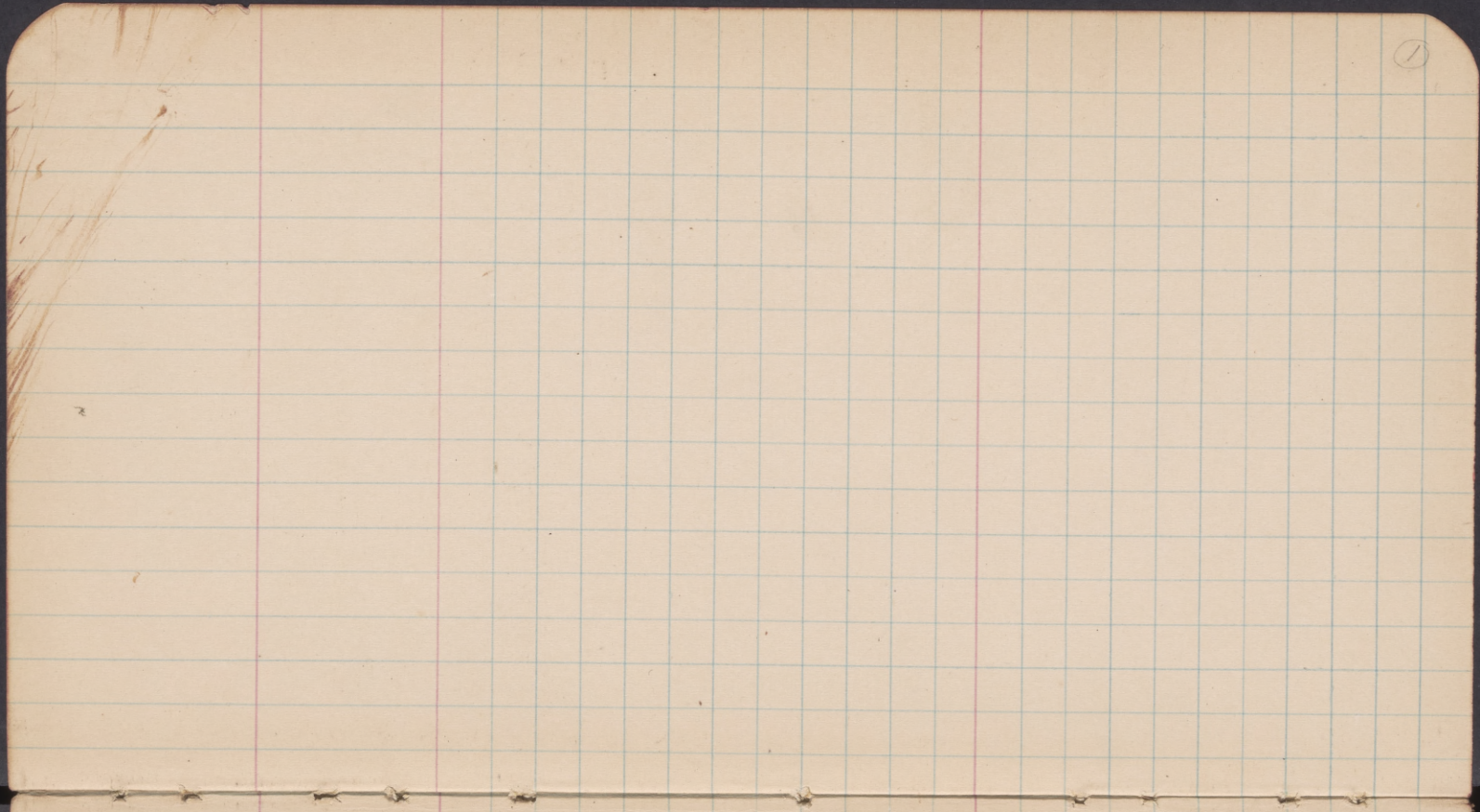
Index

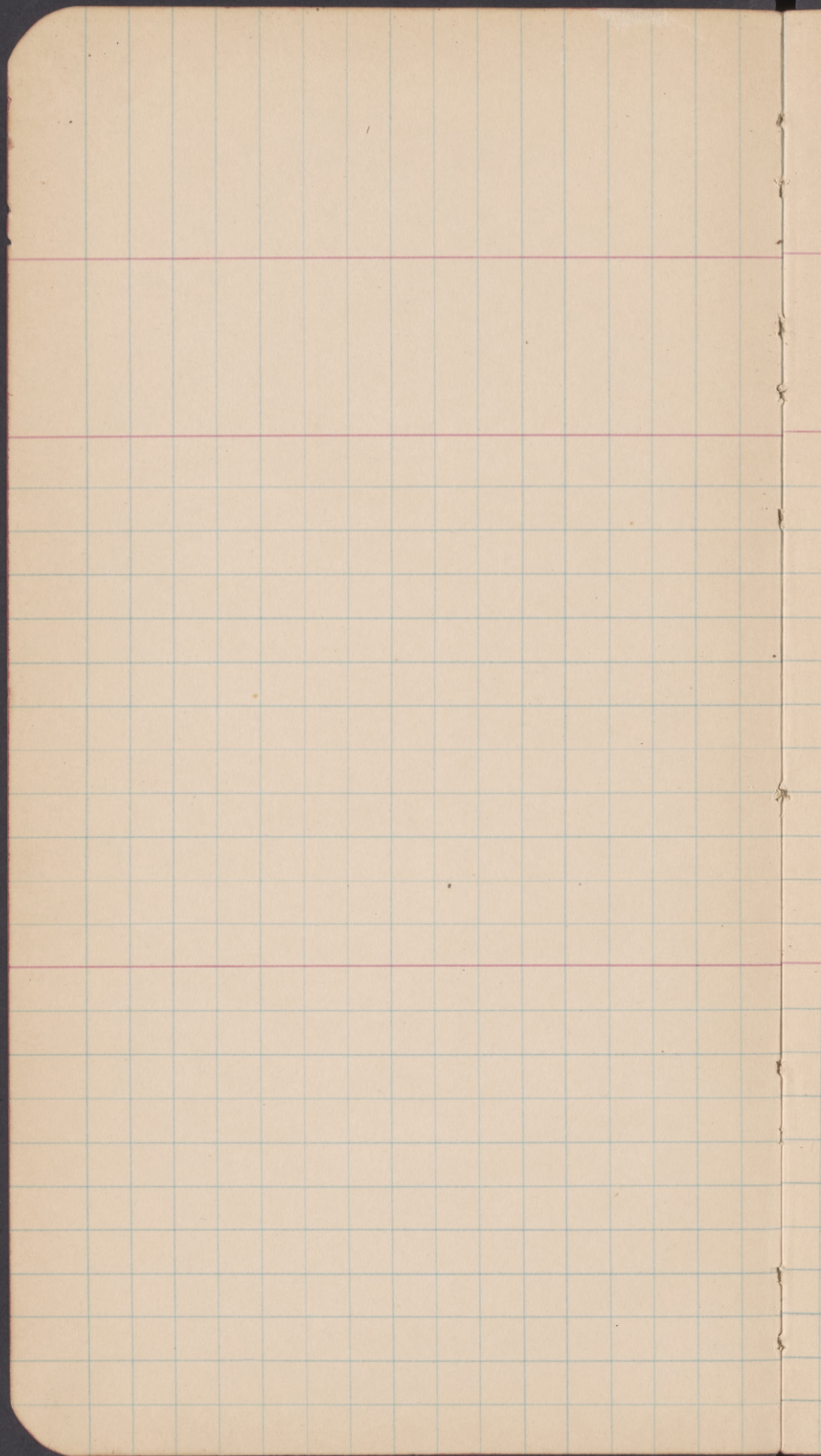
Duncan's Mill to Willow Creek

	Page
Duncan's Mill - Const Track -	3
"L" Located Line 0+00 to 167+91 ³	4-20
"A" Angle line 39+60 ⁸ = 39+60 ⁸ to 170+28 ³	59-67
"A ³ " Monte Rio	68
"A ⁵ " " " Camp Vacation Connection	69
"A ⁶ "	70
"A ⁷ " Backup of "A ³ " at Camp Vacation	71

Meridian Observation

74





2

+26⁴⁹ EC 21°31'
 +198 = 1st Pier
 1002 +85 = Big pile off road
 +50 14°15'

+20.45 = P.F. 11°26½'

Delta 43°02' ST 119°2'

1001 9°30'

External 2252 LC 22649

+822 7°51½'

= H.B. Willow Creek Loc

+75⁶⁰ = 7°11'

= 0+00 of Willow Creek Location

1000 + 50 4°45'

Assume Sta 1000+00 BC 19°00' R

994+60 Approx EC + R.

Const. Track South of Russ River Bridge at Duncan's Mill.

Began here Monday May 18-08

Const. Narrow Gauge line South of Russ. River Br. Duncan's Mill

(3)

2 + 71 ¹³ E.C.

2 + 50

2 + 00

1 + 88 ⁵⁷ B.C. 30%

1 + 28 ⁷⁶ E.C.

1 + 00

0 + 60 ⁴³ B.C. 30%

60%

0 + 49.85 = P.F.N. 7 1/2

0 + 07' = H.B.

* 0 + 00 Ahead.

1000 + 756° P.O.C. Const. Line Back

$\Delta = 24^{\circ} 46'$
S.T. 42 ⁰⁵ ✓
L.C. 82 ⁵⁶

S 02° 21' E

$x = 1.65$
 1.50
 3.15
 $\Delta = 20^{\circ} 30'$ ✓
S.T. = 34 ⁶³ ✓
L.C. = 68.33

S 42° 45' W

"L"

(7)

S 13° 45' W

$\Delta = 3^{\circ} 00'$

S.T. 25° ✓

L.C. 50°

6 + 17 ⁸¹ E.C.

6 + 00

5 + 67 ⁸¹ B.C. 6° L

S 16° 45' W

$\Delta = 36^{\circ} 40'$

S.T. 47° ✓

L.C. 91 ⁶⁷

4 + 75 ⁶⁰ E.C

4 + 50

4 + 00

3 + 83 ⁹³ B.C. 40° R.

S 23° 15' E

$\Delta = 20^{\circ} 41'$

S 20° 31' E

$$\Delta = 18^{\circ} 06'$$

$$S.T. \underline{4569} \checkmark$$

$$L.C. \underline{905}$$

13+12²⁶ E.C.

13+00

12+50

12+21⁷⁶ B.C. 20° L

S 5° 00' E

9+16⁹⁵ E.C.,

9+00

8+50

8+00

7+99⁰⁹ B.C. 14° L

$$\Delta = 16^{\circ} 30'$$

$$S.T. \underline{5938} \checkmark$$

$$L.C. \underline{11786}$$

L

(5)

Ending May 18th 08

S 8° 10' E

16+75 ⁴² E.C.

$\Delta = 3^{\circ} 36'$

16+50

S.T. 24 ⁵⁶

16+26 ³³ B.C. 7° 20' L

L.C. 49 ⁰⁹

S 2° 00' E

14+77 ⁴⁹ E.C.

$\Delta = 17^{\circ} 20'$

14+50

S.T. 58 ²⁷

14+00

L.C. 115 ⁵⁶

13+61 ⁹³ B.C. 15° R.

$\Delta 37^{\circ}06'$

S.T. $43^{\circ}00'$

L.C. $82^{\circ}44'$

$21+39^{\circ}09' E.C.$

$21+00$

$20+56^{\circ}15' B.C. 45^{\circ} R.$

$S 14^{\circ}30' W$

$20+09^{\circ}15' E.C.$

$20+00$

$19+50$

$19+00$

$18+50$

$18+00$

$\Delta 22^{\circ}22'$

S.T. $113^{\circ}31'$

L.C. $223^{\circ}67'$

$17+86^{\circ}08' B.C. 10^{\circ} R.$

Beginning May 19th 08

"L"

(6)

S 33°00'W

26+24⁹⁴E.C.

26+00

25+50

25+00

24+87⁶¹B.C. 25°L.

Δ 34°20'

S.T. 70⁹⁴

L.C. 137³³

S 70°00'W

24+50⁰⁸E.C.

24+50

24+00

23+90²⁵B.C. 25°R

Δ 14°50'

S.T. 29⁹⁰

L.C. 59³³

S 50°30'W

29+16²⁸ E.C.

29+00

28+50

28+44⁷² B.C. 30° R.

$\Delta 21^{\circ} 28'$
S.T. 36³⁰
L.C. 71⁵⁶

S 38° 45' W

28+12³¹ E.C.

28+00

27+50

27+46⁹⁸ B.C. 25° L.

$\Delta 16^{\circ} 20'$
S.T. 32²⁶
L.C. 65³³

S 58° 00' W

27+15⁵⁶ E.C.

27+00

26+50

26+32⁴⁹ B.C. 25° R.

$\Delta 20^{\circ} 46'$
S.T. 42⁰⁸
L.C. 83⁰⁷

"L"

(7)

S 33° 50' W

32+06⁷² E.C.

32+00

31+50

31+30²⁵ B.C. 25%

Δ 19° 10'
S.T. 38⁷⁷
L.C. 76⁶⁷

S 45° 15' W

29+94⁶⁷ E.C.

29+50

29+27²⁴ B.C. 13% L

Δ 8° 46'
S.T. 33⁸⁰
L.C. 67⁴³

S 58° 45' W

29+16²⁸ F.C.

38+89⁸⁰ E.C.

38+50

38+00

$\Delta 23^{\circ} 51'$

S.T. 48⁵⁰

L.C. 95⁴⁰

37+94⁴⁰ B.C. 25° R.

S 24° 15' W

36+39²⁵ E.C.

36+00

$\Delta 17^{\circ} 40'$

S.T. 25⁵⁴

L.C. 50⁴⁸

35+88⁷⁷ B.C. 35° R.

S 30° 45' W

34+03⁰⁹ E.C.

34+00

+ 50

$\Delta 2^{\circ} 36'$

S.T. 37⁰²

L.C. 74⁰⁰

33+29⁰⁹ B.C. 30° R.

"L"

(8)

48 $5^{\circ}40\frac{1}{2}'$ $A 27^{\circ}35'$ $Lch A = 227^{\circ}25'$

+50 $2^{\circ}40\frac{1}{2}'$ $S.T. 117^{\circ}25'$

47+05 45° B.C. $12^{\circ} L.$ $L.C. 229^{\circ}26'$

46+05 45° A.P.O.T. 1762°

45+29 25° E.C. $15^{\circ}30'$ 373° $S 59^{\circ}15' W$ $578^{\circ}00' W$

45+00 $12^{\circ}34\frac{1}{2}'$

44+50 P.O.C. $7^{\circ}34\frac{1}{2}'$ $\Delta 31^{\circ}00'$

$S.T. 79^{\circ}55'$

44 P.O.C. $2^{\circ}34\frac{1}{2}'$ $L.C. 155^{\circ}00'$

43+74 25° B.C. 20° P.T.

$S 29^{\circ}00' W$

$S 47^{\circ}00' W$ Beginning May 23rd 08

39+60 80° E.C.

$\Delta 10^{\circ}00'$

$S.T. 25^{\circ}10'$

End May 19th Location

39+50

$L.C. 50^{\circ}00'$

39+10 80° B.C. $20^{\circ} L.$

$S 38^{\circ}00' W$

$\Delta 29^{\circ}06'$

S.T. 185 92 ✓

2° 44' 1/2

L.C. 363.75 ✓

54

00° 44'

9442

$$52 + 87 \frac{1}{3} \text{ E.C. } 16^{\circ} 22 \frac{1}{2}$$

$\triangle 32^{\circ}45'$

+ 2.5 Δ P.O.C.

100 09 3/4

S.T. 84 28

52

L.C. 16375

S 31°45'W S 50°25'W

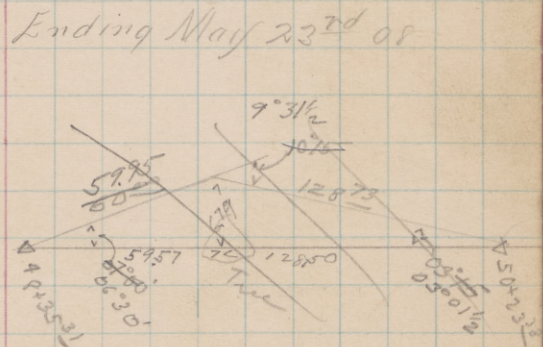
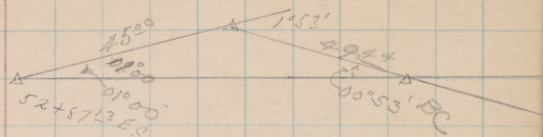
4849

11° 40' E

 $48 + 75$

$\Delta POC 10^3 10^4 2$

48 + 50



"L"

(9)

61+61²⁵ EC 6° 15' ✓

+50 5° 48'

61 03° 48' Δ 12° 30'

+50 01° 48' S.T. 78⁴⁵ ✓

60+05° BC8R 0° 00' LC 156²⁵ ✓

Ending May 25th 08.

59+13° Δ P.O.T.

P.O.T.

S 35° 15' W

S 54° 04' W

57+45³⁰ EC 14° 33' ✓

Δ 57+25³⁰ P.O.C. 13° 45' ✓

57 12° 44' 1/2 ✓

+50 Δ P.O.C. 10° 44' 1/2

56 8° 44' 1/2

+50 6° 44' 1/2

P.O.C.

~~67+15~~ POC 12°32' L.C. 2722

68 10°53'
+50 05°23'

67+01¹⁰ B.C. 22°19'

70 54

S 04°30' W S 23°26' W

66+30⁵⁶ E.C. 21°34' Δ 43°08'

66+00 18°12' S.T. 103¹⁰

L.C. 196⁰⁶

+50 12°42'

65+00 07°12'

+75 Δ P.O.C.

+50 04°27'

01°42'

64+34⁵⁰ B.C. 22°4'

61+80° Δ P.O.T. 273²⁵

S 47°45' W S 66°34' W

L

10

72+72⁶⁴ EC 16° 50'

+50 14° 48'

Δ = 33° 40'

72 10° 18'

ST = 964°

Δ + 50 POC 5° 48'

LC 187° 4'

71 01° 18'

70 + 85⁶⁰ B.C. 18° 2'

70 + 46⁵ Δ ~~ST~~

S 64° 30' W 583° 26' N

69 + 73⁸³ EC 30° 00'

+50 27° 23'

69 21° 53'

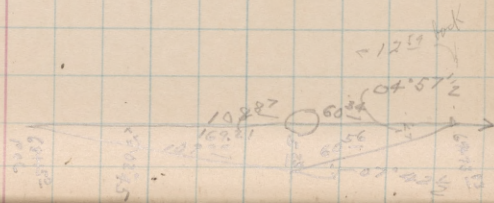
Δ 60° 00'

68 + 50 16° 23'

S.T. 150° 60'

Δ + 15 POC 12° 32'

LC 272° 18'



$\Delta + 55^\circ$ P.O.T. $08^\circ 11'$

+50

$7^\circ 39'$

$03^\circ 09'$

81+00

80+65 $^\circ$ BC 18° R

$\Delta 80+00$ P.O.T.

S $10^\circ 50' W$

S $29^\circ 44' W$

78+2724 EC

$10^\circ 01'$

78

$08^\circ 20'$

$\Delta = 20^\circ 02'$

ST = $84 \frac{23}{2}$

+50

$05^\circ 20 \frac{1}{2}'$

LC = 16674

77+00

$02^\circ 20 \frac{1}{2}'$

Long Chord 166' $\frac{1}{2}$

76+61 $^\circ$ BC 12° L

75+35 $^\circ$ Δ P.O.T.

74+50 Δ P.O.T.

S $30^\circ 50' W$

S $49^\circ 46' W$

89 + 512° ^{on stump} Δ P.O.T.

S 80° 15' W N 80° 46' W

86 + 44° ^{on stump} E.C. 16° 39'

86 + 00
+ 72° Δ P.O.C. 12° 41' Δ 33° 18'
+ 50 10° 10' ST 95²⁹
8° 11'

85 3° 41' L.C. 185°

84 + 59° B.C. 18° R.

84 + 12° Δ P.O.T.

82 + 89° Δ P.O.T.

S 47° 00' W S 65° 56' W

Beginning May 27th 08.
Ending May 26th 08.

82 + 66" EC 18° 06"

Δ + 50 P.O.C. 16° 39'

Δ = 36° 12'

82 + 00 12° 09'

ST 104¹⁵

Δ + 55° P.O.C. 08° 11'

LC 201¹¹

+36³⁴ EC 11°10'✓

91 8°26^{1/2}

+50
Δ 90 +20 POC 4°41^{1/2}
90 2°26^{1/2}
0°56^{1/2}

Δ=22°20

ST 75⁴⁶

LC 148⁸⁹

89+87⁴⁵ BC 15°L 0°00

89+68⁴⁵ P.O.T.

~~91+17³⁴ EC 11°10'~~

~~91 9°52~~

~~Δ 22°20'~~

~~+50~~

~~6°07~~

~~ST 75⁴⁶~~

~~+25 Δ POC 4°14^{1/2}~~

~~2°22~~

~~LC 149¹¹~~

~~89+68⁴⁵ B.C. 15°L~~

95+70⁶⁷ EC 11°22'N
+50 9°49'N

95 6°04'N Δ 22°45'
ST. 76⁹⁰

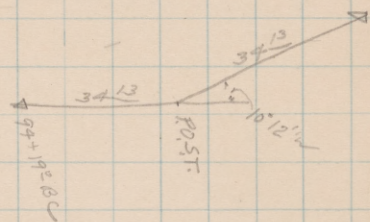
Δ 94+97¹⁰ POC 5°51'N LC 151⁶⁷

Δ 94+87⁰³ POC 05°06'

+50 02°19'N

94+19⁰⁰ B.C. 15°L

S 75°15'W N 85°42'W



93+16⁶⁷ EC 8°42'N

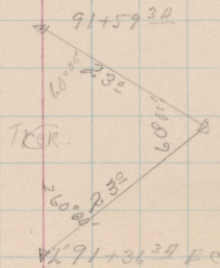
93+50 7°12'N Δ 17°24'
ST. 48⁷⁶

+50 2°42'N LC 96⁶⁷

92+20⁰⁰ B.C. 18°P. 0°00'

91+59⁰⁰ Δ P.O.T.

558°00'W S 76°54'W



+50 32°30'
101 27°30' $\Delta = 66^\circ 27'$

+50 22°30' S.T. 187⁸⁸
100 17°30' $\angle C$ 332²⁵

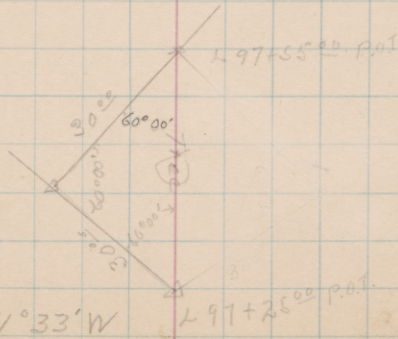
+50 12°30'
+ 10° Δ R.O.C. 8°30'
99+00 7°30' Long Chord 166⁷⁸ from 99+10 to 101+00

+50 2°30'
98+25° BC 20°00' R 0°00'

97+55° Δ P.O.T.

97+25° Δ P.O.T.

S 52° 30' W S 71° 33' W



2°

(13)

~~105 + 72²⁵ EC. 34° 57'~~~~+ 50~~~~32° 17'~~~~105~~~~26° 17'~~~~+ 50~~~~20° 17'~~~~10A~~~~14° 17'~~~~+ 50~~~~8° 17'~~~~+ 25~~~~5~~~~103~~~~2° 17'~~ $\Delta 69^{\circ} 54'$ ST. 167¹⁶L.C. 291²⁵~~102 + 81° BC 24° Lt 0° 00'~~

N 61° 30' W N 42° 00' W

101 + 5725 EC. 33° 13' 1/2

Ending May 27th

+ 50

20° 17'

△ 69° 54'

ST 167¹⁶

LC 29125

△ + 25 P.O.C.

17° 17'

104

14° 17'

△ + 81° P.O.C.

12° 00'

+ 75

11° 17'

+ 50°

8° 17'

+ 25°

5° 17'

103

2° 17'

102 + 81° BC 24° + 0° 00'

Beginning May 28th

107+80⁶ EC 15° 44'

107+50 12° 03' W

107+25 9° 03' W

107 6° 03' W

106+49⁵⁰ BC 24° R 3° 03' W

Δ = 31° 28'

ST = 67⁵⁷ 67³⁷

LC 131^W

+72²⁵ EC 34° 57'

+50 32° 17'

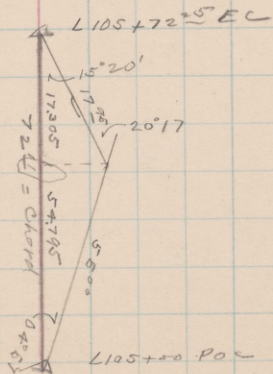
+25 29° 17'

105 Δ P.P.C. 26° 17'

+75 23° 17'

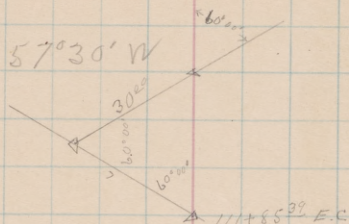
549° 10' W

S 68° 06' W



112+15³⁹ Δ P.O.T

N 76° 30' W N 57° 30' W



111 + 85³⁹ EC

11° 28'

+50

8° 49'

$\Delta = 22° 56'$

111

5° 04'

ST = 77⁵⁴

+50° 00'

01° 19'

LC 15289

110 + 32⁵⁰ BC 15° R

108 + 82⁵⁰ Δ P.O.T.

S 80° 30' W N 80° 26' W

"L"

(15)

117+07' Δ P.O.T.

S $76^{\circ}40'W$; N $84^{\circ}24'W$

116 +22⁵⁴ EC $13^{\circ}27'$

~~116 +19⁵⁴ EC $13^{\circ}18'$~~

116 $12^{\circ}19\frac{1}{2}'$

+75 $11^{\circ}04\frac{1}{2}'$

+50 $9^{\circ}49\frac{1}{2}'$

+35⁰⁰ R.S.C. $9^{\circ}04\frac{1}{2}'$

115 $7^{\circ}19\frac{1}{2}'$

+75 $6^{\circ}04\frac{1}{2}'$

+50 $4^{\circ}49\frac{1}{2}'$

+25 $3^{\circ}34\frac{1}{2}'$

114 $2^{\circ}19\frac{1}{2}'$

+75 $1^{\circ}04\frac{1}{2}'$

113+53⁰⁰ B.C. $10^{\circ}N$

~~$\Delta 26^{\circ}34'$ $\Delta 26^{\circ}54'$
S.T. ~~$135^{\circ}45'$~~ S.T. $137^{\circ}07'$
L.C. ~~$266^{\circ}00'$~~ $269^{\circ}00'$~~

Beginning May 29th 08
Ending May 28th 08

"L"

(16)

129 + 08⁹⁰ POC 5° 48'

129 5° 34½'

+ 50 4° 19½'

128 + 70° Δ POC 3° 04½'

+ 50 2° 19½'

127 0° 34½'

126 + 76⁹⁰ BC 5° R.

125 + 50° Δ P.O.T.

N 82° 00' W N 63° 09' W

123 + 84° Δ E C 2° 37½'

+ 50 1° 46½'

123 0° 31½'

122 + 79° Δ BC 5° R

Δ 19° 06' Δ = 19° 06'

ST. 11641 ST = 192⁸⁰

LC. 232° LC = 382°

Δ = 5° 15'

ST = 52⁵⁴

LC = 105°

133 + 81° EC, 3° 30' ✓

+50

2° 43½

Δ 7° 00'

133

1° 28½

S.T. 75⁸⁰ Long Chord 139⁹²

+50

0° 13½

L.C. 140°

132 + 41° B.C. 5° R+

132 + 04° Δ P.O.T.

4° 30' P.P. for 143⁸⁸ Δ

131 + 20° Δ P.O.T.

N 63° 00' W N 44° 03' W

130 + 58° EC

9° 33' ✓

+50

9° 19½

130

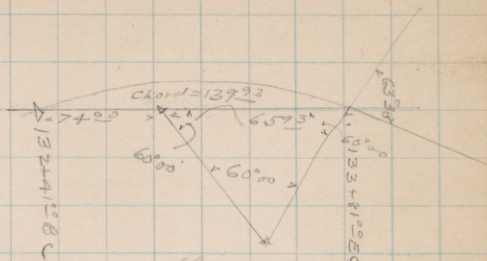
8° 04½

Δ +66° POC

7° 13½

129 + 50

6° 49½



Beginning May 30th 08.
Ending May 29th 08.

+75	4° 43'	Δ 19° 28'
+67° Δ P.O.C.	4° 07'	ST 6557
+50	02° 51'	LC 12978
+25	00° 58 1/2'	

L 139+12° BC 15' L

138+16 43 P.O.T.

137+69 42 EC 14° 02'

+50 12° 16'

+25 9° 36'

+100° Δ P.O.C. 8° 06'

137 7° 06'

+75 4° 36'

+50 2° 06'

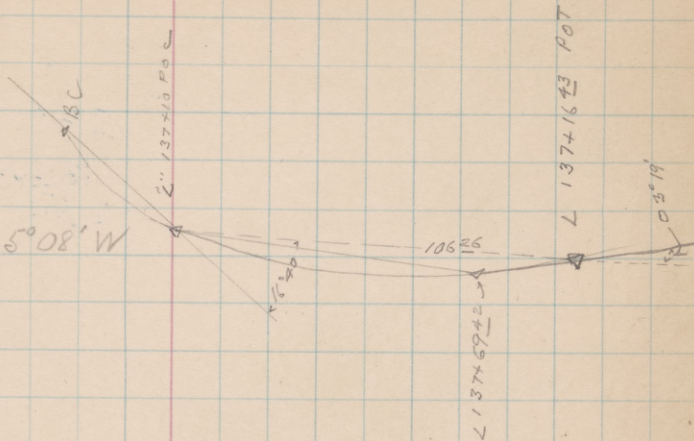
Δ = 28° 05'

ST 7174

LC 14042

136+29° BC 20' L 0° 00'

N 56° 10' W N 37° 03' W



~~+ 43° EC 7° 31'~~

~~144 6° 27'~~

~~+50 5° 12'~~

~~143 Δ P.O.C. 3° 57'~~

~~+50 2° 42'~~

~~142 1° 27'~~

~~+50 0° 12'~~

~~141 + 42° BC 5° R~~

~~Δ = 15° 03'~~

~~ST~~

~~LC = 301° 00'~~

S 76° 30' W N 84° 36' W

140 + 41.72 EC 9° 44'

+25 8° 28'

140 6° 36'

1/11

$$\Delta = 06^{\circ}42'$$

146

01°26'1/2"

S.T. 83⁸⁶

+50

0°26'1/2"

LC 167⁵⁰

145 + 28° BC 4° L 0° 50

144 + 36° 20

P.O.T.

N 88°30' W N 69°40' W

144 + 30⁸⁹ E.C.

7° 28'

144

6° 41' 1/2"

$$\Delta = 14^{\circ}36'$$

+50

05°26'1/2"

$$S.T. = 150^{19}$$

143

04°11'1/2"

$$LC = 298^{67}$$

+50

02°56'1/2"

142

01° 41' 1/2"

+50

0° 26' 1/2"

141 + 32° BC 5° R

162+76⁰⁰ Δ P.O.T.

N 78°30' W N 59°42' W

155+38³³ EC 8°20' ✓

155 6°48' Δ = 16°40' ✓

+50 4°48' ST 104⁹³

154 2°48' LC 208³³

+50 0°48'

153+30⁰⁰ BC 8°R 0°00

148+09⁰⁰ P.O.T.

S 84°45' W N 76°22' W

146+95⁵⁰ EC 3°21' ✓

146+50 02°26' ✓

Can Const. Track Ahead.

167 + 94.2' EC 38° 00'

+50

33° 59' 1/2"

167

29° 29' 1/2"

+50

24° 59' 1/2"

$\Delta = 76^\circ 00'$

166

20° 29' 1/2"

ST = 248.95'

+50

15° 59' 1/2"

LC 422.32'

165

11° 29' 1/2"

+50

6° 59' 1/2"

164

2° 29' 1/2"

163 + 72.29 BC 12° L

R.H. EC = P.O.T. Const. Track 279.5'

from End of Steel at Bank to Pass P.O.T.

S 03° 40' E S 16° 18' W Ending May 30th 08

E.C. = P.O.T. Const'd Track

608³³ from End Steel at

Bank of Russian River.

167 + 91 E.C.

52° 00'

+50

48° 17' 1/2"

167

43 47' 1/2"

+50

39 17' 1/2"

166

34 47' 1/2"

+50 Δ P.O.C.

30° 17' 1/2"

Δ = 104° 00'

165

25 47' 1/2"

ST = 407⁸⁴

Δ +50 P.O.E

21° 17' 1/2"

LC = 577^{78'}

Δ +46° P.O.C

20 56

164

16° 47' 1/2"

+50

12° 17' 1/2"

163

7° 47' 1/2"

Δ +75 P.O.C

5 32' 1/2"

+50

3° 17' 1/2"

162 + 134° BC 18° L

"L"

(20)

167 + 91¹⁸ = End of Survey F.W.E.

48+46 Δ 10° 00' Lt

84°

47+50

Δ

S 46° 50' W

S 65° 40' W ✓

46+62

Δ

12° 20' Lt

235°

S 59° 10' W

S 78° 00' W ✓

44+26 $\frac{80}{\text{on bog}}$

31° 00' Rt.

46°

S 28° 10' W

S 47° 00' W = cal. Bearing from Merid. obs. Polaris at Culmination
to W.E.

40+93 $\frac{65}{\text{on bog}}$

"A" 39+60 $\frac{80}{\text{on bog}}$ Δ

"L" 39+60 $\frac{80}{\text{on bog}}$ E.C. =

25°

May 19th 08

"A"

S 32° 20' W

S 51° 10' W ✓

56+87 Δ 17° 00' Lt

253°

S 49° 20' W

S 68° 10' W ✓

54+34 Δ 16° 20' Lt

196°

S 65° 45' W

S 84° 30' W ✓

52+38 Δ 30° 00' Trt

51+06 Δ

316°

S 35° 40' W

S 54° 30' W ✓

49+22 Δ 1° 10' Lt

76°

S 36° 30' W

S 55° 40' W ✓

63+45⁶ Δ

124⁵

66° 48' Rt

S 9° 30' W

S 28° 20' W ✓

62+21⁰ Δ

32° 00' Lt

Beginning May 20th 08

61+83⁴⁰

146⁰

S 41° 30' W

S 60° 20' W ✓

Ending May 19th 08

60+75 Δ

2° 30' Rt

59+39 Δ

190⁰

S 39° 00' W

S 57° 50' W ✓

58+85 Δ

6° 40' Rt

58+00 Δ

198⁰

"A"

(60)

68+56⁶

13°05' R.

S 19°00' W S 37°48' W ✓

67+05⁵

△ R.

41°6'

S 5°45' W S 24°43' W ✓

66+15⁰

△

21°55' Lt.

S 27°45' W S 46°38' W ✓

86°5'

65+28⁴

△

37°15' Lt.

S 65°00' W S 83°53' W ✓

45°3'

64+83¹

△

11°15' Lt.

64+45⁷

△

37°5'

S 76°15' W N 84°52' W ✓

73+73[±] Δ

S 29° 00' W S 47° 58' W ✓

73+48[±] Δ 17° 40' Lt.

150[±]

S 46° 45' W S 65° 38' W 20

71+98° Δ 19° 15' Lt

55[±]

S 66° 00' W. S 84° 53' W ✓

71+42[±] Δ 18° 05' Lt

105[±]

S 84° 00' W N 77° 02' W ✓

70+36[±] Δ 21° 15' Rt.

107[±]

S 56° 45' W S 75° 43' W ✓

69+29° Δ 37° 55' Rt.

72[±]

"A"

(61)

84+156 Δ 1° 50' Lt.

on log

1342

S 45° 15' W S 64° 08' W ✓

82+802 Δ 36° 45' Rt.

1792

S 8° 30' W S 27° 23' W ✓

81+012 Δ 4° 30' Lt.

on log

8705

S 13° 00' W S 31° 53' W ✓

78+302 Δ 18° 50' Lt.

2225

S 31° 45' W S 50° 43' W ✓

76+082 Δ 2° 45' Rt.

2082

75+172

73+72 Δ

S 29° 00' W S 47° 58' W ✓

91+42⁸ Δ 32°25' Lt

90+38⁴

Δ

N 82°10' W. N 63°22' W ✓

90+02¹

Δ

9° 50' Rt

S 88°00' W N 73°12' W ✓

88+81⁶

Δ

13°20' Rt

S 74°45' W N 86°32' W ✓

86+96⁷

Δ

18°00' Rt

S 56°45' W S 75°28' W ✓

85+78⁷

on top
Δ

13°10' Rt

S 43°30' W S 62°18' W ✓

7°

(62)

8/3

S 64° 30' W S 83° 13' W ✓ Ending May 20th 08

97+94⁵

7° 00' Lt.

242

S 71° 30' W N 89° 47' W ✓

97+70³

Δ

32° 40' Rt

1315

S 38° 45' W S 57° 33' W ✓

96+38²

Δ

35° 20' Lt

1675

S 74° 00' W N 87° 07' W ✓

94+71°

Δ

8° 40' Rt

3202

92+12°

Δ

S 65° 30' W S 84° 13' W ✓

103+65⁶

Δ

34° 15' Rt.

N 47° 40' W N 28° 42' W ✓

91⁶

N 81° 50' W N 62° 57' W ✓

102+70⁰

Δ

12° 10' Rt.

S 86° 00' W N 75° 07' W ✓

186

100+88⁰

Δ

18° 15' Rt.

S 67° 45' W S 86° 38' W ✓

96⁵

99+91⁵

Δ

14° 15' Rt.

S 53° 30' W S 72° 23' W ✓

115²

98+76²

Δ

10° 50' Lt.

Beginning May 21st 08

108+27³ Δ 36° 40' Pt. S 80° 40' W N 80° 42' W ✓

107+51 Δ 173² S 44° 10' W S 62° 38' W ✓

106+54° Δ 80² 33° 40' Lt. S 77° 30' W N 83° 42' W ✓

105+74° Δ 58² 29° 40' Lt. N 72° 45' W N 54° 02' W ✓

105+16° Δ 32° 22° 22° 40' Lt. N 50° 15' W N 31° 22' W ✓

104+84° Δ 118² 2° 40' Lt. N 47° 40' W N 28° 42' W ✓

132

N $84^{\circ}15'$ W N $65^{\circ}27'$ W ✓114+98° Δ $11^{\circ}15'$ Lt.N $73^{\circ}00'$ W N $50^{\circ}12'$ W ✓

76

114+22° Δ $3^{\circ}30'$ Rt.N $76^{\circ}30'$ W N $57^{\circ}42'$ W ✓

130

112+92° Δ $23^{\circ}00'$ Rt.112+42° Δ $\frac{1}{2}$ P.O.T.

964

111+59° Δ P.O.T.

110+49° Δ P.O.T.

~~N~~ 73° 57' W

145

N 82° 00' W N 63° 07' W ✓

127+08² Δ 9° 20' Rt.

190

S 88° 45' W N 72° 27' W ✓

125+18² Δ 1° 10' Rt.

399²

S 87° 30' W N 73° 37' W ✓

121+38¹ Δ 0° 40' Rt.

125²

S 86° 50' W N 74° 17' W ✓

120+12² Δ 8° 35' Rt.

346²

118+79¹ Δ P.O.T.

S 78° 20' W N 82° 52' W ✓

Δ 118+79² P.O.T.

116+63³ 22° 24' 1/2 L

#

XX

XX

XX

116+63³

Δ 79° 18' →

Δ T'

Beginning May. 22-08

7°

(65)

N 58° 50' W N 39° 57' W ✓

136+50° Δ 3° 20' Rt.

241E

N 62° 10' W N 43° 17' W ✓

134+052 Δ 8° 45' Lt

108E

N 53° 20' W N 34° 32' W ✓

132+97° Δ 17° 15' Rt.

335-31

131+63° Δ POT

N 70° 30' W N 51° 47' W ✓

129+615 Δ 26° 20' L

108E

N 44° 15' W N 25° 27' W ✓

128+532 Δ 37° 40' Rt.

16E

N 42° 22' W N 63° 07' W ✓

296 E

S 76° 50' W N 84° 22' W ✓

142+00 Δ 9° 25' Lt.

73

S 86° 15' W N 74° 57' W ✓

141+27° Δ 9° 35' Lt.

89

N 84° 10' W N 65° 22' W ✓

140+38° Δ 8° 20' Lt.

127 E

N 75° 50' W N 57° 02' W ✓

139+10° Δ 17° 05' Lt.

260 E

"A"

(66)

N 78° 35' W

N 59° 49' W ✓

159+11° Δ 2° 55' R+

333

N. 81° 30' W

N. 62° 44' W ✓

155+78° Δ 13° 45' R+

5684

S 84° 45' W.

N 76° 29' W ✓

150+096 Δ 1° 55' L+

2715

S 86° 45' W

N 74° 34' W ✓

147+38° Δ 4° 47' L+

2413

N 88° 30' W

N 69° 47' W ✓

146+57 0° 0' R.O.T.

144+96° Δ 14° 35' R.

27°30'
55°01'
27°50'

Point Cem + Willow Creek. Const. line

Ending May 22nd 08

170 + 28° = 27°30' 1/2 Lt. S 01°50' E

S 16°15' W

378

S 25°00' W

S 43°45' W ✓

27°55'
55°51'
27°55' 1/2

166 + 50° = 27°55' 1/2 Lt.

63

S 52°55' W

S 71°41' W ✓

165 + 87° = 20°55' Lt.

111

S 74°00' W

N 87°29' W ✓

164 + 75° = 29°35' Lt.

564

"A"

67

1055+63⁴⁰

first Cap Trestle

N 52° 45' W

N 32° 33' W

Pt.

1053+58⁸⁷ Δ

Lt. 30° 16'

60° 31' 1/2

External 15L

43/15

N 23° 00' W

N 02° 17' W

973° from P.T. Back

1049+27⁷² Δ

Lt. 37° 03' ✓

74° 06'

N 18° 50' E

N 34° 46' E

1045+78⁰⁰ Δ

Rt. 160° 04'

1045+78⁰⁰

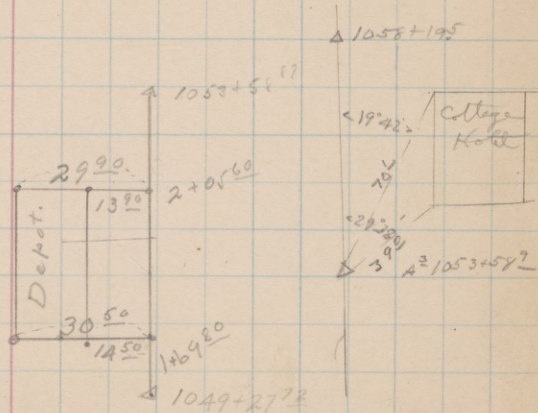
= P.T. Cont'd Track See Notes Mar. 1st 68

A³ Monte Rio May 31-1908

N 43°13'W

$1058 + 19 \frac{46}{100} \triangle L + 10^\circ 40' \text{ P.L. } 21^\circ 20'$

1057+54° Last Cap Trestle.



1048+72⁰⁰ Δ 19° 00' R

S 56° 30' W

575° 16' W

1047+86⁶⁰ Δ 17° 00' R

S 39° 15' W.

558° 16' W

1045+36⁰⁰ Δ 25° 20' R.

S 14° 00' W

532° 56' W

1043+83⁰⁰ Δ 26° 06' R.

52° 12'

S 12° 00' E

506° 50' W

A⁵ 1042+82⁷² Ahead?

A³ 1031+86 ± Pst. Bch. 04° 37' L 9° 13'

507° 30' E

511° 27' W

A⁵ Montorio - Camp Vac. Connections

(69)

A³ 1053+58^{E7} Ahead }
 A⁵ 1053+58^{E7} Back } 12:00 P
 14°15'

N 52°45' W

{ N 32°33' W Ahead on A³
 { N 32°32' W Back

N 64°45' W

N 67°00' W

N 46°47' W

1051+77⁹⁰ Δ 22°57' R.

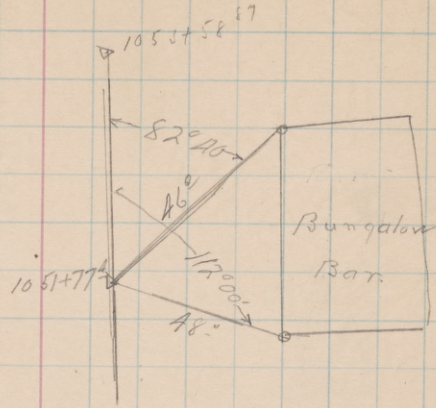
N 88°30' W

N 69°44' W

1050+05²⁵ Δ 16°00' R

S 75°30' W

N 85°44' W



997+77⁶⁰ Δ P.O.T.

996+88⁰ Δ P.O.T.

995+91⁰⁰ Δ P.O.T.

S 7°15' W

526°07'W

A⁶ 994+81⁰⁰ Δ 5°00' Lt.

A⁶ 994+41⁰⁰ P.O.T. Ahead
~~A⁶ 994+91⁰⁰ Back~~

A³ 993+09⁰⁰ Δ P.O.T. on Stump.

S 12°15' W

531°07'W

A³ 992+32⁷⁰ Δ Back Sight.

'A'

1005+90²³

end of line May 31.08

1002+84⁹² Δ P.O.T.

1000+83³⁰ Δ P.O.T.

S 9° 00' W

52.757' W

999+19²⁰ Δ 01° 50' R+

512°14'E

A = 964 + 990 Ahead } 72°20'R from Chord.
" 962 + 00 FOC Back }

L 960 + 412 BC = Backlight

584°34'E ahead
" 584°38'E Back

AZ = Backup of A3 at Camp Vacation

June 1-1908

(1)

$\begin{cases} = A3 975 + 203 \text{ POT. Ahead} \\ AZ 975 + 203 \text{ POT. Back} \end{cases} \left. \begin{array}{l} 5.08^{\circ} 10' W \\ 0^{\circ} 33' R \end{array} \right\}$

$\begin{cases} A3 527^{\circ} 57' W \text{ ahead} \\ AZ 527^{\circ} 57' W \end{cases}$

$5.08^{\circ} 30' W$

972 + 1973 POT.

Note: Angles were taken with Lath B.Ss.

970 + 1872 POT.

$527^{\circ} 24' W$

970 + 045 $17^{\circ} 09' R$

$5.08^{\circ} 35' E$

$510^{\circ} 15' W$

969 + 216 $29^{\circ} 00' R$

$537^{\circ} 40' E$

$518^{\circ} 45' E$

968 + 001 $02^{\circ} 00' R$

$540^{\circ} E$

$520^{\circ} 45' E$

966 + 502 edge pond

965 + 303 $08^{\circ} 31\frac{1}{2}' L$

$512^{\circ} 14' E$

edge pond

Fr. W. E.

$$L \text{ Chord} = 2 R \sin \frac{1}{2} \Delta = R \frac{1}{2} D \sin \frac{1}{2} \Delta$$

TABLE IV.—MINUTES IN DECIMALS OF A DEGREE.

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

TABLE V.—INCHES IN DECIMALS OF A FOOT.

1-16	3-32	1/8	3-16	1/4	5-16	3/8	1/2	5/8	3/4	7/8
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

TABLE VI.—RADII, ORDINATES AND DEFLECTIONS.

Deg.	Radius	Mid Ord	Tan Def.	Chd. Def.	Def for 1 Foot	Deg.	Radius	Mid Ord	Tan Def.	Chd. Def.	Def. for 1 Foot
0° 10'	34377.	.036	.145	.291	0.05'	7°	819.0	1.528	6.105	12.21	2.10'
20	17189.	.073	.291	.582	0.10	20'	781.8	1.600	6.395	12.79	2.20
30	11459.	.109	.436	.873	0.15	30	764.5	1.637	6.540	13.08	2.25
40	8594.4	.145	.582	1.164	0.20	40	747.9	1.673	6.685	13.37	2.30
50	6875.5	.182	.727	1.454	0.25	8	716.8	1.746	6.976	13.95	2.40
1	5729.6	.218	.873	1.745	0.30	20	688.2	1.819	7.266	14.53	2.50
10	4911.2	.255	1.018	2.036	0.35	30	674.7	1.855	7.411	14.82	2.55
20	4297.3	.291	1.164	2.327	0.40	40	661.7	1.892	7.556	15.11	2.60
30	3819.8	.327	1.309	2.618	0.45	9	637.3	1.965	7.846	15.69	2.70
40	3437.9	.364	1.454	2.909	0.50	20	614.6	2.037	8.136	16.27	2.80
50	3125.4	.400	1.600	3.200	0.55	30	603.8	2.074	8.281	16.56	2.85
2	2864.9	.436	1.745	3.490	0.60	40	593.4	2.110	8.426	16.85	2.90
10	2644.6	.473	1.891	3.781	0.65	10	573.7	2.183	8.716	17.43	3.00
20	2455.7	.509	2.036	4.072	0.70	30	546.4	2.292	9.150	18.30	3.15
30	2292.0	.545	2.181	4.363	0.75	11	521.7	2.402	9.585	19.16	3.30
40	2148.8	.582	2.327	4.654	0.80	30	499.1	2.511	10.02	20.04	3.45
50	2022.4	.618	2.472	4.945	0.85	12	478.3	2.620	10.45	20.91	3.60
3	1910.1	.655	2.618	5.235	0.90	30	459.3	2.730	10.89	21.77	3.75
10	1809.6	.691	2.763	5.526	0.95	13	441.7	2.839	11.32	22.64	3.90
20	1719.1	.727	2.908	5.817	1.00	30	425.4	2.949	11.75	23.51	4.05
30	1637.3	.764	3.054	6.108	1.05	14	410.3	3.058	12.18	24.37	4.20
40	1562.9	.800	3.199	6.398	1.10	30	396.2	3.168	12.62	25.24	4.35
50	1495.0	.836	3.345	6.689	1.15	15	383.1	3.277	13.05	26.11	4.50
4	1432.7	.873	3.490	6.980	1.20	30	370.8	3.387	13.49	26.97	4.65
10	1375.4	.909	3.635	7.271	1.25	16	359.3	3.496	13.92	27.84	4.80
20	1322.5	.945	3.718	7.561	1.30	30	348.5	3.606	14.35	28.70	4.95
30	1273.6	.982	3.926	7.852	1.35	17	338.3	3.716	14.78	29.56	5.10
40	1228.1	1.018	4.071	8.143	1.40	18	319.6	3.935	15.64	31.29	5.40
50	1185.8	1.055	4.217	8.433	1.45	19	302.9	4.155	16.51	33.01	5.70
5	1146.3	1.091	4.362	8.724	1.50	20	287.9	4.374	17.37	34.73	6.00
10	1109.3	1.127	4.507	9.014	1.55	21	274.4	4.594	18.22	36.44	6.30
20	1074.7	1.164	4.653	9.305	1.60	22	262.0	4.814	19.08	38.16	6.60
30	1042.1	1.200	4.798	9.596	1.65	23	250.8	5.035	19.94	39.87	6.90
40	1011.5	1.237	4.943	9.886	1.70	24	240.5	5.255	20.79	41.58	7.20
50	982.6	1.273	5.088	10.18	1.75	25	231.0	5.476	21.64	43.28	7.50
6	955.4	1.309	5.234	10.47	1.80	26	222.3	5.697	22.50	44.99	7.80
10	929.6	1.346	5.379	10.76	1.85	27	214.2	5.918	23.35	46.69	8.10
20	905.1	1.382	5.524	11.05	1.90	28	206.7	6.139	24.19	48.38	8.40
30	881.9	1.418	5.669	11.34	1.95	29	199.7	6.360	25.04	50.07	8.70
40	859.9	1.455	5.814	11.63	2.00	30	193.2	6.583	25.88	51.76	9.00

TABLE VII.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Angle	Tangent	External	Angle	Tangent	External	Angle	Tangent	External
I°	50.00	.22	II°	551.70	26.50	2I°	1061.9	97.57
10'	58.34	.30	10'	560.11	27.31	10'	1070.6	99.16
20	66.67	.39	20	568.53	28.14	20	1079.2	100.75
30	75.01	.49	30	576.95	28.97	30	1087.8	102.35
40	83.34	.61	40	585.36	29.82	40	1096.4	103.97
50	91.68	.73	50	593.79	30.68	50	1105.1	105.60
2	100.01	.87	I2	602.21	31.56	22	1113.7	107.24
10	108.35	1.02	10	610.64	32.45	10	1122.4	108.90
20	116.68	1.19	20	619.07	33.35	20	1131.0	110.57
30	125.02	1.36	30	627.50	34.26	30	1139.7	112.25
40	133.36	1.55	40	635.93	35.18	40	1148.4	113.95
50	141.70	1.75	50	644.37	36.12	50	1157.0	115.66
3	150.04	1.96	I3	652.81	37.07	23	1165.7	117.38
10	158.38	2.19	10	661.25	38.03	10	1174.4	119.12
20	166.72	2.43	20	669.70	39.01	20	1183.1	120.87
30	175.06	2.67	30	678.15	39.99	30	1191.8	122.63
40	183.40	2.93	40	686.60	40.99	40	1200.5	124.41
50	191.74	3.21	50	695.06	42.00	50	1209.2	126.20
4	200.08	3.49	I4	703.51	43.03	24	1217.9	128.00
10	208.43	3.79	10	711.97	44.07	10	1226.6	129.82
20	216.77	4.10	20	720.44	45.12	20	1235.3	131.65
30	225.12	4.42	30	728.90	46.18	30	1244.0	133.50
40	233.47	4.76	40	737.37	47.25	40	1252.8	135.35
50	241.81	5.10	50	745.85	48.34	50	1261.5	137.23
5	250.16	5.46	I5	754.32	49.44	25	1270.2	139.11
10	258.51	5.83	10	762.80	50.55	10	1279.0	141.01
20	266.86	6.21	20	771.29	51.68	20	1287.7	142.93
30	275.21	6.61	30	779.77	52.89	30	1296.5	144.85
40	283.57	7.01	40	788.26	53.97	40	1305.3	146.79
50	291.92	7.43	50	796.75	55.13	50	1314.0	148.75
6	300.28	7.86	I6	805.25	56.31	26	1322.8	150.71
10	308.64	8.31	10	813.75	57.50	10	1331.6	152.69
20	316.99	8.76	20	822.25	58.70	20	1340.4	154.69
30	325.35	9.23	30	830.76	59.91	30	1349.2	156.70
40	333.71	9.71	40	839.27	61.14	40	1358.0	158.72
50	342.08	10.20	50	847.78	62.38	50	1366.8	160.76
7	350.44	10.71	I7	856.30	63.63	27	1375.6	162.81
10	358.81	11.22	10	864.82	64.90	10	1384.4	164.86
20	367.17	11.75	20	873.35	66.18	20	1393.2	166.95
30	375.54	12.29	30	881.88	67.47	30	1402.0	169.04
40	383.91	12.85	40	890.41	68.77	40	1410.9	171.15
50	392.28	13.41	50	898.95	70.09	50	1419.7	173.27
8	400.66	13.99	I8	907.49	71.42	28	1428.6	175.41
10	409.03	14.58	10	916.03	72.76	10	1437.4	177.55
20	417.41	15.18	20	924.58	74.12	20	1446.3	179.72
30	425.79	15.80	30	933.13	75.49	30	1455.1	181.89
40	434.17	16.43	40	941.69	76.86	40	1464.0	184.08
50	442.55	17.07	50	950.25	78.26	50	1472.9	186.29
9	450.93	17.72	I9	958.81	79.67	29	1481.8	188.51
10	459.32	18.38	10	967.38	81.09	10	1490.7	190.74
20	467.71	19.06	20	975.96	82.53	20	1499.6	192.99
30	476.10	19.75	30	984.53	83.97	30	1508.5	195.25
40	484.49	20.45	40	993.12	85.43	40	1517.4	197.53
50	492.88	21.16	50	1001.7	86.90	50	1526.3	199.82
10	501.28	21.89	20	1010.3	88.39	30	1535.3	202.12
10	509.68	22.62	10	1018.9	89.89	10	1544.2	204.44
20	518.08	23.38	20	1027.5	91.40	20	1553.1	206.77
30	526.48	24.14	30	1036.1	92.92	30	1562.1	209.12
40	534.89	24.91	40	1044.7	94.46	40	1571.0	211.48
50	543.29	25.70	50	1053.3	96.01	50	1580.0	213.86

TABLE.—VII.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Angle	Tangent	External	Angle	Tangent	External	Angle	Tangent	External
31°	1589.0	216.3	41°	2142.2	387.4	51°	2732.9	618.4
10'	1598.0	218.7	10'	2151.7	390.7	10'	2743.1	622.8
20	1606.9	221.1	20	2161.2	394.1	20	2753.4	627.2
30	1615.9	223.5	30	2170.8	397.4	30	2763.7	631.7
40	1624.9	226.0	40	2180.3	400.8	40	2773.9	636.2
50	1633.9	228.4	50	2189.9	404.2	50	2784.2	640.7
32	1643.0	230.9	42	2199.4	407.6	52	2794.5	645.2
10	1652.0	233.4	10	2209.0	411.1	10	2804.9	649.7
20	1661.0	235.9	20	2218.6	414.5	20	2815.2	654.2
30	1670.0	238.4	30	2228.1	418.0	30	2825.6	658.8
40	1679.1	241.0	40	2237.7	421.4	40	2835.9	663.4
50	1688.1	243.5	50	2247.3	425.0	50	2846.3	668.0
33	1697.2	246.1	43	2257.0	428.5	53	2856.7	672.7
10	1706.3	248.7	10	2266.6	432.0	10	2867.1	677.3
20	1715.3	251.3	20	2276.2	435.6	20	2877.5	682.0
30	1724.4	253.9	30	2285.9	439.2	30	2888.0	686.7
40	1733.5	256.5	40	2295.6	442.8	40	2898.4	691.4
50	1742.6	259.1	50	2305.2	446.4	50	2908.9	696.1
34	1751.7	261.8	44	2314.9	450.0	54	2919.4	700.9
10	1760.8	264.5	10	2324.6	453.6	10	2929.9	705.7
20	1770.0	267.2	20	2334.3	457.3	20	2940.4	710.5
30	1779.1	269.9	30	2344.1	461.0	30	2951.0	715.3
40	1788.2	272.6	40	2353.8	464.6	40	2961.5	720.1
50	1797.4	275.3	50	2363.5	468.4	50	2972.1	725.0
35	1806.6	278.1	45	2373.3	472.1	55	2982.7	729.9
10	1815.7	280.8	10	2383.1	475.8	10	2993.3	734.8
20	1824.9	283.6	20	2392.8	479.6	20	3003.9	739.7
30	1834.1	286.4	30	2402.6	483.8	30	3014.5	744.6
40	1843.3	289.2	40	2412.4	487.2	40	3025.2	749.6
50	1852.5	292.0	50	2422.3	491.0	50	3035.8	754.6
36	1861.7	294.9	46	2432.1	494.8	56	3046.5	759.6
10	1870.9	297.7	10	2441.9	498.7	10	3057.2	764.6
20	1880.1	300.6	20	2451.8	502.5	20	3067.9	769.7
30	1889.4	303.5	30	2461.7	506.4	30	3078.7	774.7
40	1898.6	306.4	40	2471.5	510.3	40	3089.4	779.8
50	1907.9	309.3	50	2481.4	514.3	50	3100.2	784.9
37	1917.1	312.2	47	2491.3	518.2	57	3110.9	790.1
10	1926.4	315.2	10	2501.2	522.2	10	3121.7	795.2
20	1935.7	318.1	20	2511.2	526.1	20	3132.6	800.4
30	1945.0	321.1	30	2521.1	530.1	30	3143.4	805.6
40	1954.3	324.1	40	2531.1	534.2	40	3154.2	810.9
50	1963.6	327.1	50	2541.0	538.2	50	3165.1	816.1
38	1972.9	330.2	48	2551.0	542.2	58	3176.0	821.4
10	1982.2	333.2	10	2561.0	546.3	10	3186.9	826.7
20	1991.5	336.3	20	2571.0	550.4	20	3197.8	832.0
30	2000.9	339.3	30	2581.0	554.5	30	3208.8	837.3
40	2010.2	342.4	40	2591.0	558.6	40	3219.7	842.7
50	2019.6	345.5	50	2601.1	562.8	50	3230.7	848.1
39	2029.0	348.6	49	2611.2	566.9	59	3241.7	853.5
10	2038.4	351.8	10	2621.2	571.1	10	3252.7	858.9
20	2047.8	354.9	20	2631.3	575.3	20	3263.7	864.3
30	2057.2	358.1	30	2641.4	579.5	30	3274.8	869.8
40	2066.6	361.3	40	2651.5	583.8	40	3285.8	875.3
50	2076.0	364.5	50	2661.6	588.0	50	3296.9	880.8
40	2085.4	367.7	50	2671.8	592.3	60	3308.0	886.4
10	2094.9	371.0	10	2681.9	596.6	10	3319.1	892.0
20	2104.3	374.2	20	2692.1	600.9	20	3330.3	897.5
30	2113.8	377.5	30	2702.3	605.3	30	3341.4	903.2
40	2123.3	380.8	40	2712.5	609.6	40	3352.6	908.8
50	2132.7	384.1	50	2722.7	614.0	50	3363.8	914.5

TABLE VII.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Angle	Tangent	External	Angle	Tangent	External	Angle	Tangent	External
61°	3375.0	920.2	71°	4086.9	1368.2	81°	4893.6	1805.3
10'	3386.3	925.9	10'	4099.5	1315.6	10'	4908.0	1814.7
20	3397.5	931.6	20	4112.1	1322.9	20	4922.5	1824.1
30	3408.8	937.3	30	4124.8	1330.3	30	4937.0	1833.6
40	3420.1	943.1	40	4137.4	1337.7	40	4951.5	1843.1
50	3431.4	948.9	50	4150.1	1345.1	50	4966.1	1852.6
62	3442.7	954.8	72	4162.8	1352.6	82	4980.7	1862.2
10	3454.1	960.6	10	4175.6	1360.1	10	4995.4	1871.8
20	3465.4	966.5	20	4188.5	1367.6	20	5010.0	1881.5
30	3476.8	972.4	30	4201.2	1375.2	30	5024.8	1891.2
40	3488.3	978.3	40	4214.0	1382.8	40	5039.5	1900.9
50	3499.7	984.3	50	4226.8	1390.4	50	5054.3	1910.7
63	3511.1	990.2	73	4239.7	1398.0	83	5069.2	1920.5
10	3522.6	996.2	10	4252.6	1405.7	10	5084.0	1930.4
20	3534.1	1002.3	20	4265.6	1413.5	20	5099.0	1940.3
30	3545.6	1008.3	30	4278.5	1421.2	30	5113.9	1950.3
40	3557.2	1014.4	40	4291.5	1429.0	40	5128.9	1960.2
50	3568.7	1020.5	50	4304.6	1436.8	50	5143.9	1970.3
64	3580.3	1026.6	74	4317.6	1444.6	84	5159.0	1980.4
10	3591.9	1032.8	10	4330.7	1452.5	10	5174.1	1990.5
20	3603.5	1039.0	20	4343.8	1460.4	20	5189.3	2000.6
30	3615.1	1045.2	30	4356.9	1468.4	30	5204.4	2010.8
40	3626.8	1051.4	40	4370.1	1476.4	40	5219.7	2021.1
50	3638.5	1057.7	50	4383.3	1484.4	50	5234.9	2031.4
65	3650.2	1063.9	75	4396.5	1492.4	85	5250.3	2041.7
10	3661.9	1070.2	10	4409.8	1500.5	10	5265.6	2052.1
20	3673.7	1076.6	20	4423.1	1508.6	20	5281.0	2062.5
30	3685.4	1082.9	30	4436.4	1516.7	30	5296.4	2073.0
40	3697.2	1089.3	40	4449.7	1524.9	40	5311.9	2083.5
50	3709.0	1095.7	50	4463.1	1533.1	50	5327.4	2094.1
66	3720.9	1102.2	76	4476.5	1541.4	86	5343.0	2104.7
10	3732.7	1108.6	10	4489.9	1549.7	10	5358.6	2115.3
20	3744.6	1115.1	20	4503.4	1558.0	20	5374.2	2126.0
30	3756.5	1121.7	30	4516.9	1566.3	30	5389.9	2136.7
40	3768.5	1128.2	40	4530.4	1574.7	40	5405.6	2147.5
50	3780.4	1134.8	50	4544.0	1583.1	50	5421.4	2158.4
67	3792.4	1141.4	77	4557.6	1591.6	87	5437.2	2169.2
10	3804.4	1148.0	10	4571.2	1600.1	10	5453.1	2180.2
20	3816.4	1154.7	20	4584.8	1608.6	20	5469.0	2191.1
30	3828.4	1161.3	30	4598.5	1617.1	30	5484.9	2202.2
40	3840.5	1168.1	40	4612.2	1625.7	40	5500.9	2213.2
50	3852.6	1174.8	50	4626.0	1634.4	50	5517.0	2224.3
68	3864.7	1181.6	78	4639.8	1643.0	88	5533.1	2235.5
10	3876.8	1188.4	10	4653.6	1651.7	10	5549.2	2246.7
20	3889.0	1195.2	20	4667.4	1660.5	20	5565.4	2258.0
30	3901.2	1202.0	30	4681.3	1669.2	30	5581.6	2269.3
40	3913.4	1208.9	40	4695.2	1678.1	40	5597.8	2280.6
50	3925.6	1215.8	50	4709.2	1686.9	50	5614.2	2292.0
69	3937.9	1222.7	79	4723.2	1695.8	89	5630.5	2303.5
10	3950.2	1229.7	10	4737.2	1704.7	10	5646.9	2315.0
20	3962.5	1236.7	20	4751.2	1713.7	20	5663.4	2326.6
30	3974.8	1243.7	30	4765.3	1722.7	30	5679.9	2338.2
40	3987.2	1250.8	40	4779.4	1731.7	40	5696.4	2349.8
50	3999.5	1257.9	50	4793.6	1740.8	50	5713.0	2361.5
70	4011.9	1265.0	80	4807.7	1749.9	90	5729.7	2373.3
10	4024.4	1272.1	10	4822.0	1759.0	10	5746.3	2385.1
20	4036.8	1279.3	20	4836.2	1768.2	20	5763.1	2397.0
30	4049.3	1286.5	30	4850.5	1777.4	30	5779.9	2408.9
40	4061.8	1293.6	40	4864.8	1786.7	40	5796.7	2420.9
50	4074.4	1300.9	50	4879.2	1796.0	50	5813.6	2432.9

TABLE VII.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Angle	Tangent	External	Angle	Tangent	External	Angle	Tangent	External
91°	5830.5	2444.9	101°	6950.6	3278.1	III°	8336.7	4386.1
10'	5847.5	2457.1	10'	6971.3	3294.1	10'	8362.7	4407.6
20	5864.6	2469.3	20	6992.0	3310.1	20	8388.9	4429.2
30	5881.7	2481.5	30	7012.7	3326.1	30	8415.1	4450.9
40	5898.8	2493.8	40	7033.6	3342.3	40	8441.5	4472.7
50	5916.0	2506.1	50	7054.5	3358.5	50	8468.0	4494.6
92	5933.2	2518.5	102	7075.5	3374.9	II2	8494.6	4516.6
10	5950.5	2531.0	10	7096.6	3391.2	10	8521.3	4538.8
20	5967.9	2543.5	20	7117.8	3407.7	20	8548.1	4561.1
30	5985.3	2556.0	30	7139.0	3424.3	30	8575.0	4583.4
40	6002.7	2568.6	40	7160.3	3440.9	40	8602.1	4606.0
50	6020.2	2581.3	50	7181.7	3457.6	50	8629.3	4628.6
93	6037.8	2594.0	103	7203.2	3474.4	II3	8656.6	4651.3
10	6055.4	2606.8	10	7224.7	3491.3	10	8684.0	4674.2
20	6073.1	2619.7	20	7246.3	3508.2	20	8711.5	4697.2
30	6090.8	2632.6	30	7268.0	3525.2	30	8739.2	4720.3
40	6108.6	2645.5	40	7289.8	3542.4	40	8767.0	4743.6
50	6126.4	2658.5	50	7311.7	3559.6	50	8794.9	4766.9
94	6144.3	2671.6	104	7333.6	3576.8	II4	8822.9	4790.4
10	6162.6	2684.7	10	7355.6	3594.2	10	8851.0	4814.1
20	6180.2	2697.9	20	7377.8	3611.7	20	8879.3	4837.8
30	6198.3	2711.2	30	7399.9	3629.2	30	8907.7	4861.7
40	6216.4	2724.5	40	7422.2	3646.8	40	8936.3	4885.7
50	6234.6	2737.9	50	7444.6	3664.5	50	8965.0	4909.9
95	6252.8	2751.3	105	7467.0	3682.3	II5	8993.8	4934.1
10	6271.1	2764.8	10	7489.6	3700.2	10	9022.7	4958.6
20	6289.4	2778.3	20	7512.2	3718.2	20	9051.7	4983.1
30	6307.9	2792.0	30	7534.9	3736.2	30	9080.9	5007.8
40	6326.3	2805.6	40	7557.7	3754.4	40	9110.3	5032.6
50	6344.8	2819.4	50	7580.5	3772.6	50	9139.8	5057.6
96	6363.4	2833.2	106	7603.5	3791.0	II6	9169.4	5082.7
10	6382.1	2847.0	10	7626.6	3809.4	10	9199.1	5107.9
20	6400.8	2861.0	20	7649.7	3827.9	20	9229.0	5133.3
30	6419.5	2875.0	30	7672.9	3846.5	30	9259.0	5158.8
40	6438.4	2889.0	40	7696.3	3865.2	40	9289.2	5184.5
50	6457.3	2903.1	50	7719.7	3884.0	50	9319.5	5210.3
97	6476.2	2917.3	107	7743.2	3902.9	II7	9349.9	5236.2
10	6495.2	2931.6	10	7766.8	3921.9	10	9380.5	5262.3
20	6514.3	2945.9	20	7790.5	3940.9	20	9411.3	5288.6
30	6533.4	2960.3	30	7814.3	3960.1	30	9442.2	5315.0
40	6552.6	2974.7	40	7838.1	3979.4	40	9473.2	5341.5
50	6571.9	2989.2	50	7862.1	3998.7	50	9504.4	5368.2
98	6591.2	3003.8	108	7886.2	4018.2	II8	9535.7	5395.1
10	6610.6	3018.4	10	7910.4	4037.8	10	9567.2	5422.1
20	6630.1	3033.1	20	7934.6	4057.4	20	9598.9	5449.2
30	6649.6	3047.9	30	7959.0	4077.2	30	9630.7	5476.5
40	6669.2	3062.8	40	7983.5	4097.1	40	9662.6	5504.0
50	6688.8	3077.7	50	8008.0	4117.0	50	9694.7	5531.7
99	6708.6	3092.7	109	8032.7	4137.1	II9	9727.0	5559.4
10	6728.4	3107.7	10	8057.4	4157.3	10	9759.4	5587.4
20	6748.2	3122.9	20	8082.3	4177.5	20	9792.0	5615.5
30	6768.1	3138.1	30	8107.3	4197.9	30	9824.8	5643.8
40	6788.1	3153.3	40	8132.3	4218.4	40	9857.7	5672.3
50	6808.2	3168.7	50	8157.5	4239.0	50	9890.8	5700.9
100	6828.3	3184.1	110	8182.8	4259.7	120	9924.0	5729.7
10	6848.5	3199.6	10	8208.2	4280.5	10	9957.5	5758.6
20	6868.8	3215.1	20	8233.7	4301.4	20	9991.0	5787.7
30	6889.2	3230.8	30	8259.3	4322.4	30	10025.0	5817.0
40	6909.6	3246.5	40	8285.0	4343.6	40	10059.0	5846.5
50	6930.1	3262.3	50	8310.8	4364.8	50	10093.0	5876.1

TABLE VIII.—MIDDLE ORDINATES FOR RAILS.

Deg. of Curve	LENGTH OF RAILS.							Deg. of Curve	LENGTH OF RAILS.						
	32	30	28	26	24	22	20		32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008	16°	.356	.313	.273	.236	.200	.170	.139
2	.045	.038	.034	.029	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.037	.058	.051	.044	.037	.031	.026	18	.400	.351	.306	.265	.225	.190	.156
4	.089	.079	.069	.060	.050	.042	.035	19	.423	.371	.324	.280	.238	.201	.165
5	.112	.099	.086	.074	.063	.053	.044	20	.445	.392	.341	.296	.250	.212	.174
6	.134	.117	.102	.088	.076	.064	.052	21	.466	.410	.357	.309	.262	.222	.182
7	.156	.137	.120	.104	.088	.074	.061	22	.487	.430	.375	.325	.275	.233	.191
8	.179	.158	.137	.119	.100	.085	.070	23	.509	.450	.390	.338	.287	.243	.199
9	.201	.175	.153	.133	.112	.095	.078	24	.531	.469	.408	.354	.299	.253	.208
10	.223	.196	.171	.148	.125	.106	.087	25	.552	.486	.424	.367	.311	.263	.216
11	.245	.216	.188	.163	.139	.117	.096	26	.573	.506	.441	.382	.323	.274	.225
12	.268	.236	.206	.179	.151	.128	.105	27	.594	.524	.457	.396	.335	.284	.233
13	.290	.254	.222	.192	.163	.138	.113	28	.618	.545	.475	.411	.348	.294	.242
14	.312	.275	.239	.207	.175	.148	.122	29	.638	.564	.491	.424	.361	.303	.250
15	.334	.295	.257	.223	.188	.159	.131	30	.660	.583	.508	.438	.374	.313	.259

CURVE FORMULÆ.

$T = R \tan. \frac{1}{2} I$	$R = T \cot. \frac{1}{2} I$	Chord def. = $\frac{\text{chord}^2}{R}$
$T = 50 \tan. \frac{1}{2} I$	$R = \frac{50}{\sin. D}$	No. chords = $\frac{\frac{1}{2} I}{D}$
$\sin. D = \frac{50}{R}$	$E = R \text{ ex. sec. } \frac{1}{2} I$	Tan. def. = $\frac{1}{2} \text{ chord def.}$
$\sin. D = \frac{50 \tan. \frac{1}{2} I}{T}$	$E = T \tan. \frac{1}{4} I$	

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

Table 7 contains Tangents and External to a 1° curve. Tan. and Ext. to any other radius may be found, nearly enough, by dividing the Tan. or Ext. opposite the given central angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table 7: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.), and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance: Multiply the angle by .01745, and the product by the distance.

RIGHT ANGLE TRIANGLES.—Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. 10. $10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. 25. $25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875 = \text{Base}$.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

1000 + 83 80

1001 + 00

1001 + 84 92

1002

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.00	7.15	7.30	7.45	7.60	7.75	7.90	8.05	8.20	8.35	0
1	8.50	8.65	8.80	8.95	9.10	9.25	9.40	9.55	9.70	9.85	1
2	10.00	10.15	10.30	10.45	10.60	10.75	10.90	11.05	11.20	11.35	2
3	11.50	11.65	11.80	11.95	12.10	12.25	12.40	12.55	12.70	12.85	3
4	13.00	13.15	13.30	13.45	13.60	13.75	13.90	14.05	14.20	14.35	4
5	14.50	14.65	14.80	14.95	15.10	15.25	15.40	15.55	15.70	15.85	5
6	16.00	16.15	16.30	16.45	16.60	16.75	16.90	17.05	17.20	17.35	6
7	17.50	17.65	17.80	17.95	18.10	18.25	18.40	18.55	18.70	18.85	7
8	19.00	19.15	19.30	19.45	19.60	19.75	19.90	20.05	20.20	20.35	8
9	20.50	20.65	20.80	20.95	21.10	21.25	21.40	21.55	21.70	21.85	9
10	22.00	22.15	22.30	22.45	22.60	22.75	22.90	23.05	23.20	23.35	10
11	23.50	23.65	23.80	23.95	24.10	24.25	24.40	24.55	24.70	24.85	11
12	25.00	25.15	25.30	25.45	25.60	25.75	25.90	26.05	26.20	26.35	12
13	26.50	26.65	26.80	26.95	27.10	27.25	27.40	27.55	27.70	27.85	13
14	28.00	28.15	28.30	28.45	28.60	28.75	28.90	29.05	29.20	29.35	14
15	29.50	29.65	29.80	29.95	30.10	30.25	30.40	30.55	30.70	30.85	15
16	31.00	31.15	31.30	31.45	31.60	31.75	31.90	32.05	32.20	32.35	16
17	32.50	32.65	32.80	32.95	33.10	33.25	33.40	33.55	33.70	33.85	17
18	34.00	34.15	34.30	34.45	34.60	34.75	34.90	35.05	35.20	35.35	18
19	35.50	35.65	35.80	35.95	36.10	36.25	36.40	36.55	36.70	36.85	19
20	37.00	37.15	37.30	37.45	37.60	37.75	37.90	38.05	38.20	38.35	20
21	38.50	38.65	38.80	38.95	39.10	39.25	39.40	39.55	39.70	39.85	21
22	40.00	40.15	40.30	40.45	40.60	40.75	40.90	41.05	41.20	41.35	22
23	41.50	41.65	41.80	41.95	42.10	42.25	42.40	42.55	42.70	42.85	23
24	43.00	43.15	43.30	43.45	43.60	43.75	43.90	44.05	44.20	44.35	24
25	44.50	44.65	44.80	44.95	45.10	45.25	45.40	45.55	45.70	45.85	25
26	46.00	46.15	46.30	46.45	46.60	46.75	46.90	47.05	47.20	47.35	26
27	47.50	47.65	47.80	47.95	48.10	48.25	48.40	48.55	48.70	48.85	27
28	49.00	49.15	49.30	49.45	49.60	49.75	49.90	50.05	50.20	50.35	28
29	50.50	50.65	50.80	50.95	51.10	51.25	51.40	51.55	51.70	51.85	29
30	52.00	52.15	52.30	52.45	52.60	52.75	52.90	53.05	53.20	53.35	30
31	53.50	53.65	53.80	53.95	54.10	54.25	54.40	54.55	54.70	54.85	31
32	55.00	55.15	55.30	55.45	55.60	55.75	55.90	56.05	56.20	56.35	32
33	56.50	56.65	56.80	56.95	57.10	57.25	57.40	57.55	57.70	57.85	33
34	58.00	58.15	58.30	58.45	58.60	58.75	58.90	59.05	59.20	59.35	34
35	59.50	59.65	59.80	59.95	60.10	60.25	60.40	60.55	60.70	60.85	35
36	61.00	61.15	61.30	61.45	61.60	61.75	61.90	62.05	62.20	62.35	36
37	62.50	62.65	62.80	62.95	63.10	63.25	63.40	63.55	63.70	63.85	37
38	64.00	64.15	64.30	64.45	64.60	64.75	64.90	65.05	65.20	65.35	38
39	65.50	65.65	65.80	65.95	66.10	66.25	66.40	66.55	66.70	66.85	39
40	67.00	67.15	67.30	67.45	67.60	67.75	67.90	68.05	68.20	68.35	40

Calculated by F. E. Paradis, C. F



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 16 FEET WIDE. SIDE SLOPES $1\frac{1}{2}$ TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	25.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Calculated by F. E. Paradis, C. E.

